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INTEROFFICE CORRESPONDENCE

11A202

DATE August 3, 1992

TO S A Pettis, Surface Water, Bldg 80, X8615

FROM  R S Roberts, Remediation Programs, Bldg 80, X8508

SUBJECT RISKS DUE TO THE SPRAY EVAPORATION OF B-2 POND - RSR-016-92

A risk analysis was performed to evaluate the potential human health risk due to the spray evaporation of the B-2 pond. The results of this evaluation show that the carcinogenic risk due to this activity is 2.7×10^{-10} and the Hazard Index is 4.5×10^{-7} . These values are well below the acceptable carcinogenic range of 1×10^{-4} to 1×10^{-6} and the acceptable Hazard Index of 1.0.

In order to calculate the above risks, it was assumed that an individual will live at the Rocky Flats Plant fence line for the next thirty years and that spray evaporation will continue for that period of time. This individual will be exposed to volatile organic compounds (VOC) that are volatilized from the spray head when water is sprayed over the B-2 pond. The VOCs volatilized during spray evaporation are transported from the spray head to the hypothetical individual at the fence line. This exposure scenario was reviewed and approved by the Department of Energy (DOE) and the Colorado Department of Health (CDH). All assumptions used in this analysis are outlined in Attachment I.

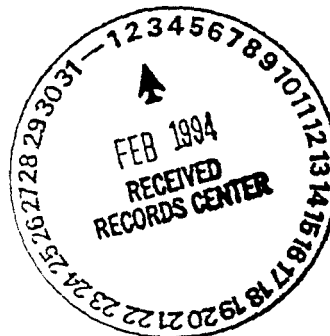
Attachment II shows the analytical results used in this risk analysis. Methylene Chloride, Acetone, 1,2-Dichloroethene and Trichloroethene were evaluated in this risk assessment. J and B qualified data were assumed to be present at the reported value.

If you have any questions or need support in presenting this information, please contact me.

dmf

Attachments
As Stated (2)

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G. M. Anderson
M. B. Arndt
R. C. Flory
D. S. Murray
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DOCUMENT CLASSIFICATION
REVIEW WAIVER PER
CLASSIFICATION OFFICE

SPRAY EVAPORATION RISK ASSUMPTIONS

A) Spray Evaporation Specifications

Average Flowrate = 1000 gallons\minute
Daily Exposure Duration = 10 hours\day
Annual Exposure Duration = 125 days\year
Duration of Spray Evaporation Activities = 30 years

B) Dispersion of Volatiles

$$CHI\backslash Q = (1\backslash(PI)(U)(SIGMA-Y)(SIGMA-Z))$$

PI = 3 1416
U = 4 7 meters\second
SIGMA-Y = 110 meters
SIGMA-Z = 43 meters
Distance to Individual = 1 6 kilometers
Stability Class = D

Assumptions were taken from the Plan For Prevention Of Contaminant Dispersion, dated February, 1992

Assume 100% volatilization from water

C) Inhalation of Volatilized Constituents

$$\text{Intake} = \frac{(ER)(CHI\backslash Q)(IR)(DEF)(AEF)(ED)}{(BW)(AT)}$$

ER = Emission Rate = Chemical Specific Value
CHI\backslash Q = Dispersion Value
IR = Inhalation Rate = 0 83 m^3\hour
DEF = Daily Exposure Frequency = 10 hours\day
AEF = Annual Exposure Frequency = 125 days\year
ED = Exposure Duration = 30 years
BW = Body Weight = 70 kg
AT = Averaging Time = 70 Years (Carcinogens)
AT = Averaging Time = 30 Years (Non-Carcinogens)

$$\text{Carcinogenic Risk} = (\text{Intake})(\text{Slope Factor})$$

$$\text{Hazard Index} = \text{Intake}\backslash \text{Reference Dose}$$

Slope Factors and Reference Doses used in this analysis were taken from the Integrated Risk Information System (IRIS) and the Health Effects Assessment Summary Tables (HEAST) The primary source was IRIS Slope Factors and Reference Doses are current as of 7\30\92

1A
 VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name ILAS-ST LOUIS

Contract 26201
Pond B-2 6/22/92
NP50631 WC

Lab Code. ILAS

Case No. --

SAS No

SUB No.: ---

Matrix (soil/water) WaterLab Sample ID 2109-601

Sample wt/vol

5(g/ml) ±1Lab File ID. >E4065Level (low/med) LOWDate Received 06/23/92

% Moisture not dec -

Date Analyzed. 06/23/92Column (pack/cap) LAP

Dilution Factor. 1

CAS NO	COMPOUND	CONCENTRATION UNITS		Q
		(ug/L or ug/Kg)	-----	
74-87-3	Chloromethane	10	10	
74-83-9	Bromomethane	10	10	
75-01-4	Vinyl Chloride	10	10	
75-00-3	Chloroethane	10	10	
75-09-2	Methylene Chloride	11	18	
67-64-1	Acetone	18		
75-15-0	Carbon Disulfide	5	10	
75-35-4	1,1-Dichloroethene	5	10	
75-34-3	1,1-Dichloroethane	5	10	
540-59-0	1,2-Dichloroethene (total)	4		J
67-66-3	Chloroform	5	10	
107-06-2	1,2-Dichloroethane	5	10	
78-93-3	2-Butanone	10	10	
71-55-6	1,1,1-Trichloroethane	5	10	
56-23-5	Carbon Tetrachloride	5	10	
108-05-4	Vinyl Acetate	10	10	
75-27-4	Bromodichloromethane	5	10	
78-87-5	1,2-Dichloropropane	5	10	
10061-01-5	cis-1,3-Dichloropropene	5	10	
79-01-6	Trichloroethene	4		J
124-48-1	Dibromochloromethane	5	10	
79-00-5	1,1,2-Trichloroethane	5	10	
71-43-2	Benzene	5	10	
10061-02-6	trans-1,3-Dichloropropene	5	10	
75-25-2	Bromoform	5	10	
108-10-1	4-Methyl-2-Pentanone	10	10	
591-78-6	2-Hexanone	10	10	
127-18-4	Tetrachloroethene	5	10	
79-34-5	1,1,2,2-Tetrachloroethane	5	10	
108-88-3	Toluene	5	10	
108-90-7	Chlorobenzene	5	10	
100-41-4	Ethylbenzene	5	10	
100-42-5	Styrene	5	10	
1330-20-7	Xylene (total)	5	10	

ADPT

 0 - (file) correct
 Level

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